Armed Forces College of Medicine

AFCM

Planes & regions of abdomen + Peritoneum

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INTENDED LEARNING OBJECTIVES (ILO)

By the end of the lecture, the candidate should be able to:

1. **Define the peritoneum: parietal/visceral peritoneum; Greater/lesser sacs; supracolic space/ infracolic spaces of greater sac.**
2. **Enumerate the Intraperitoneal and retroperitoneal viscera.**
3. **Comment on the clinically related problems.**
4. **Describe the abdominal quadrants and regions, the**

Lecture Plan

1. Part 1 (10 min) Introduction to peritoneum
2. Part 2 (20 min) Layers of abdomen
3. Part 3 (10 min) Applied points & Subdivisions of peritoneal cavity
4. Part 4 (10 min) Abdominal planes & quadrants (5 min)

Peritoneum

Facts about peritoneum:

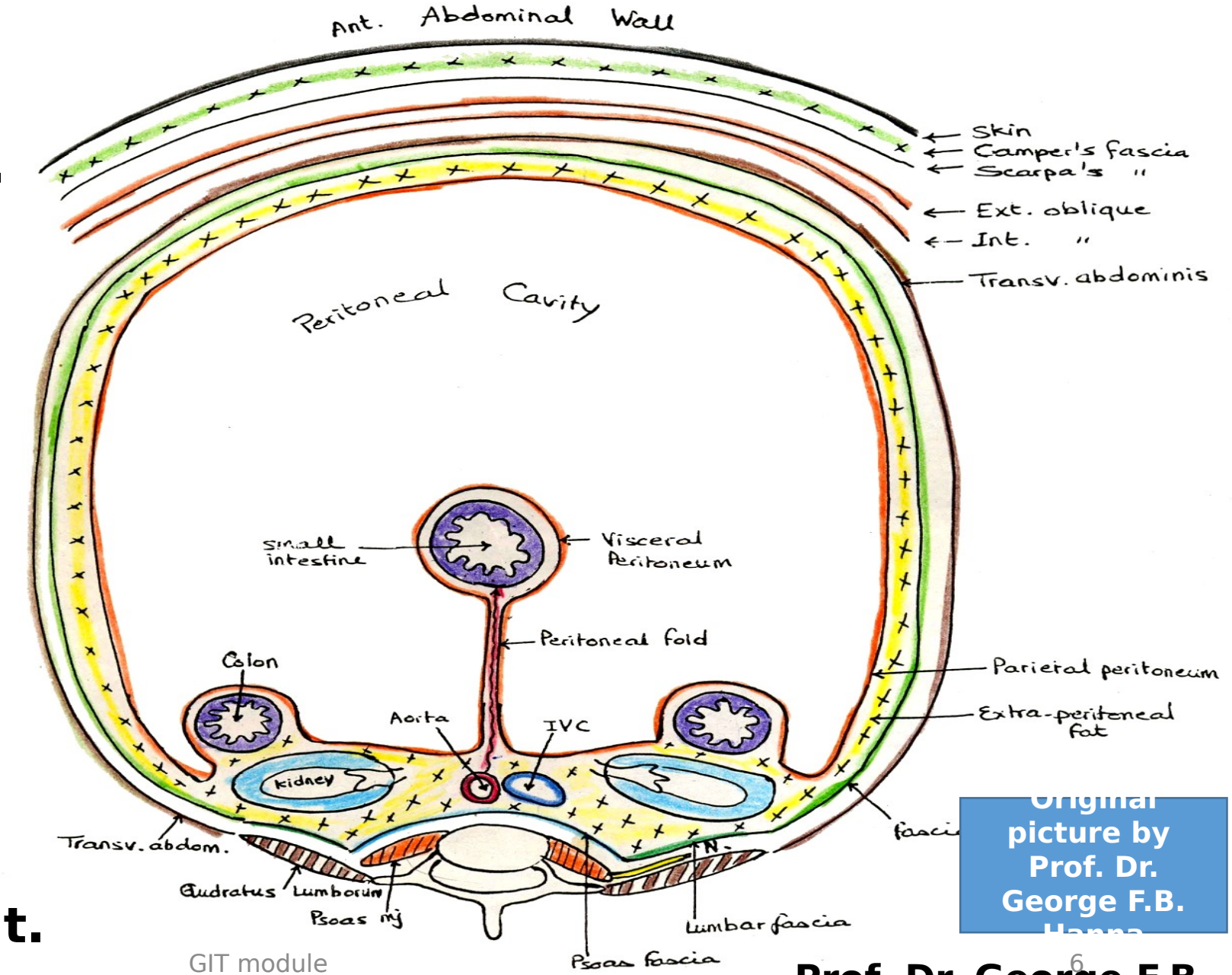
1- Closed serous sac (except in ♀ where uterine tubes open in it).

2- Lines the abdominal cavity.

3- It ≠ abdominal cavity, but it is a smaller sac within it.

4- Empty serous sac, containing NO organs inside !!!!

5- Nearly all organs develop in the post. abdominal wall & travel their way towards the ant. abdominal wall.



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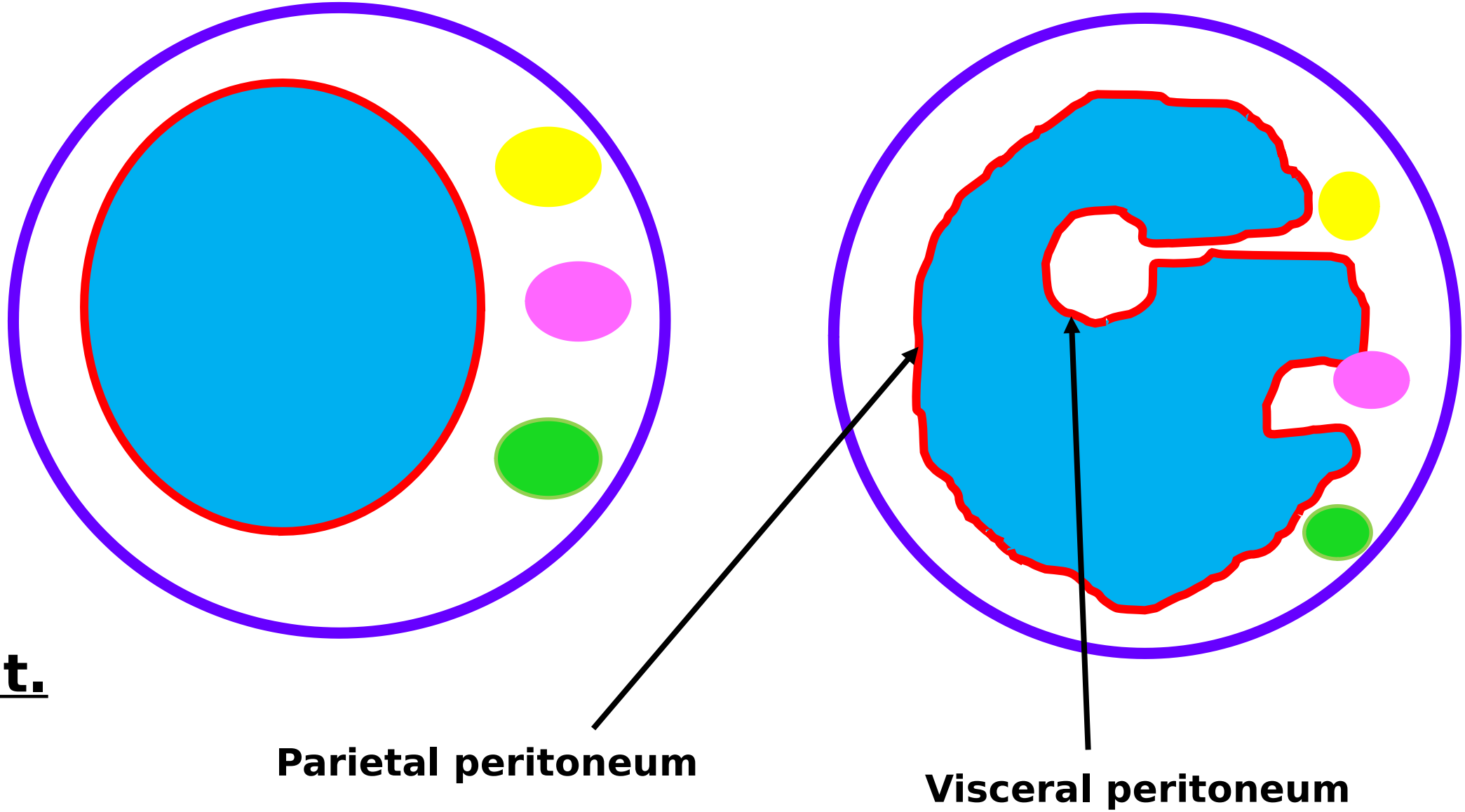
Abdominal organs develop on posterior abdominal wall

Peritoneal cavity

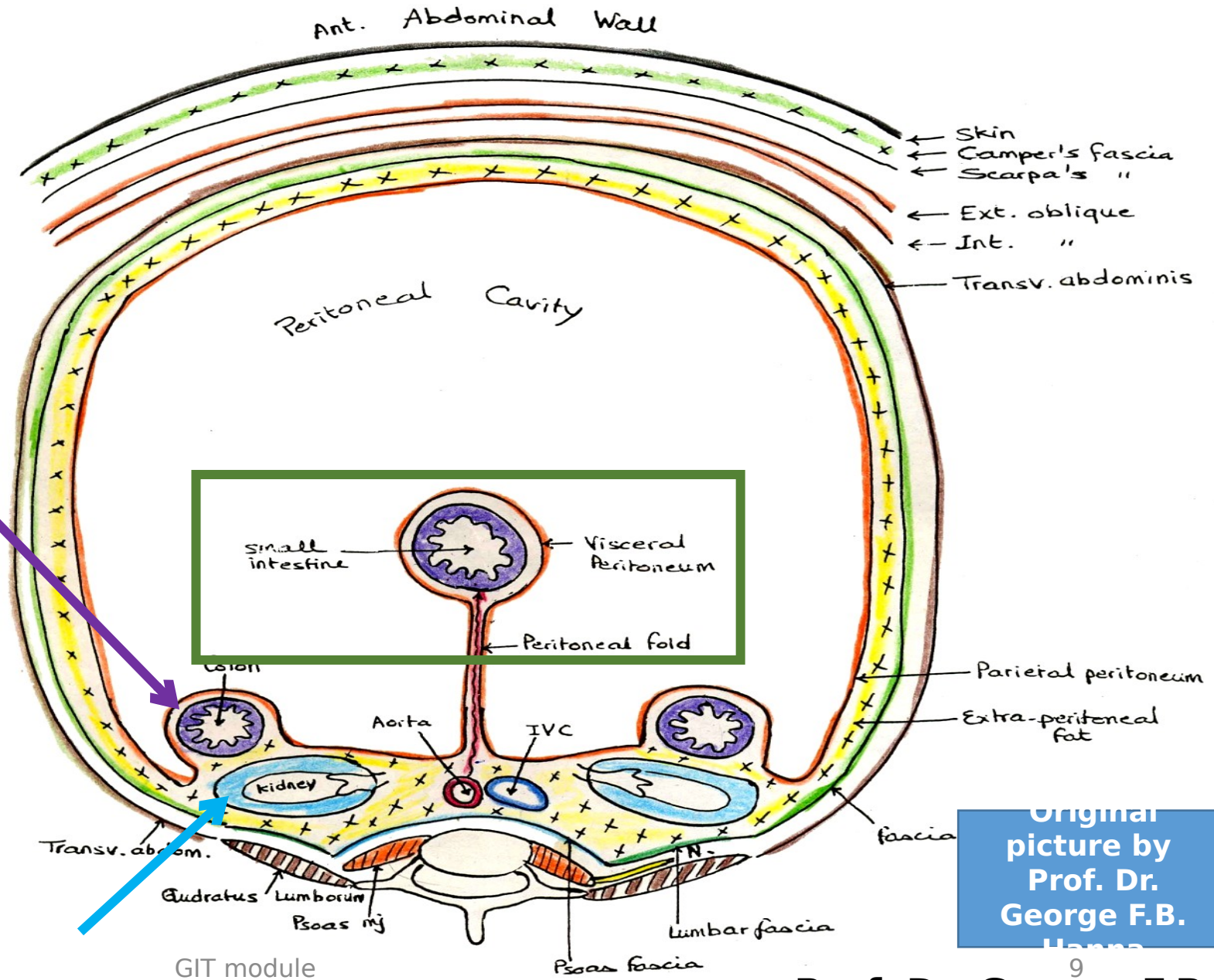

Ant.
Parietal peritoneum
Visceral peritoneum

6- Legitimate question: What is the relation bet. different abd. organs to the peritoneum ? :

a. If the organs do not move at all (e.g. kidney & pancreas → Retro-peritoneal organs (most post. placed organs).)

b. If the organs do not move excessively (e.g. duodenum & colon) → They are covered by peritoneum ant. & lat.

c. If the organs move excessively e.g. stomach & small



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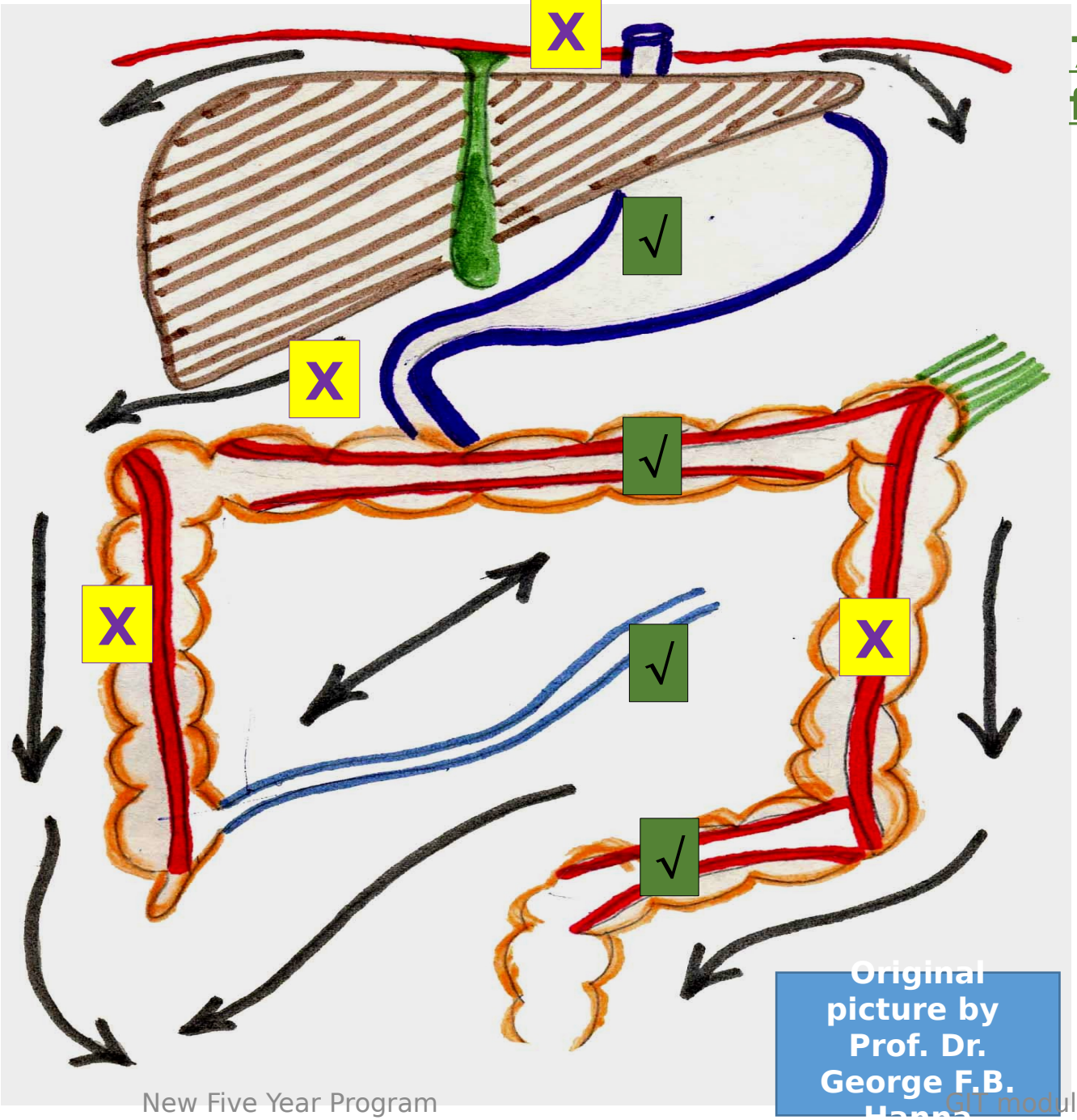
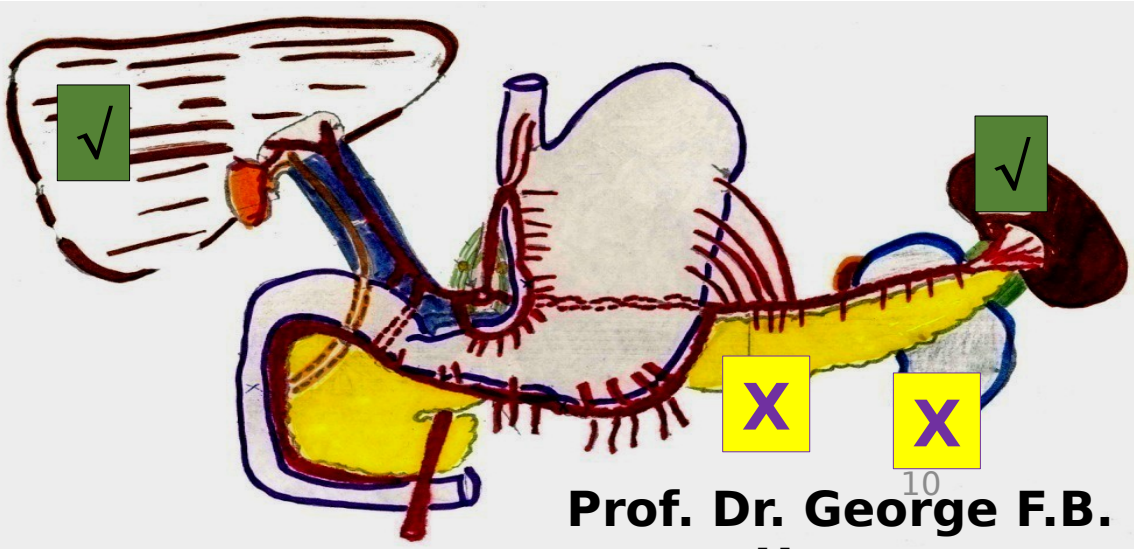


7- What are the organs with peritoneal folds ? X √

a. Oesophagus X
b. Stomach √
c. Duodenum X
d. Rest of small intestine √
e. Asc. colon X
f. Transverse colon √
g. Desc. colon X
h. Pelvic colon √
i. 2 other = pancreas & kidney X
j. 2 other = liver & spleen √



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3 Types of peritoneal folds

Omentum

- **Between stomach & another organ**
- e.g. lesser & greater omentum

Mes-

- **Between intestine & PAW**
- e.g. mesentry of small intestine / mesocolon

Lig.

- **Otherwise**
- e.g. gastro-phrenic / phrenico-colic

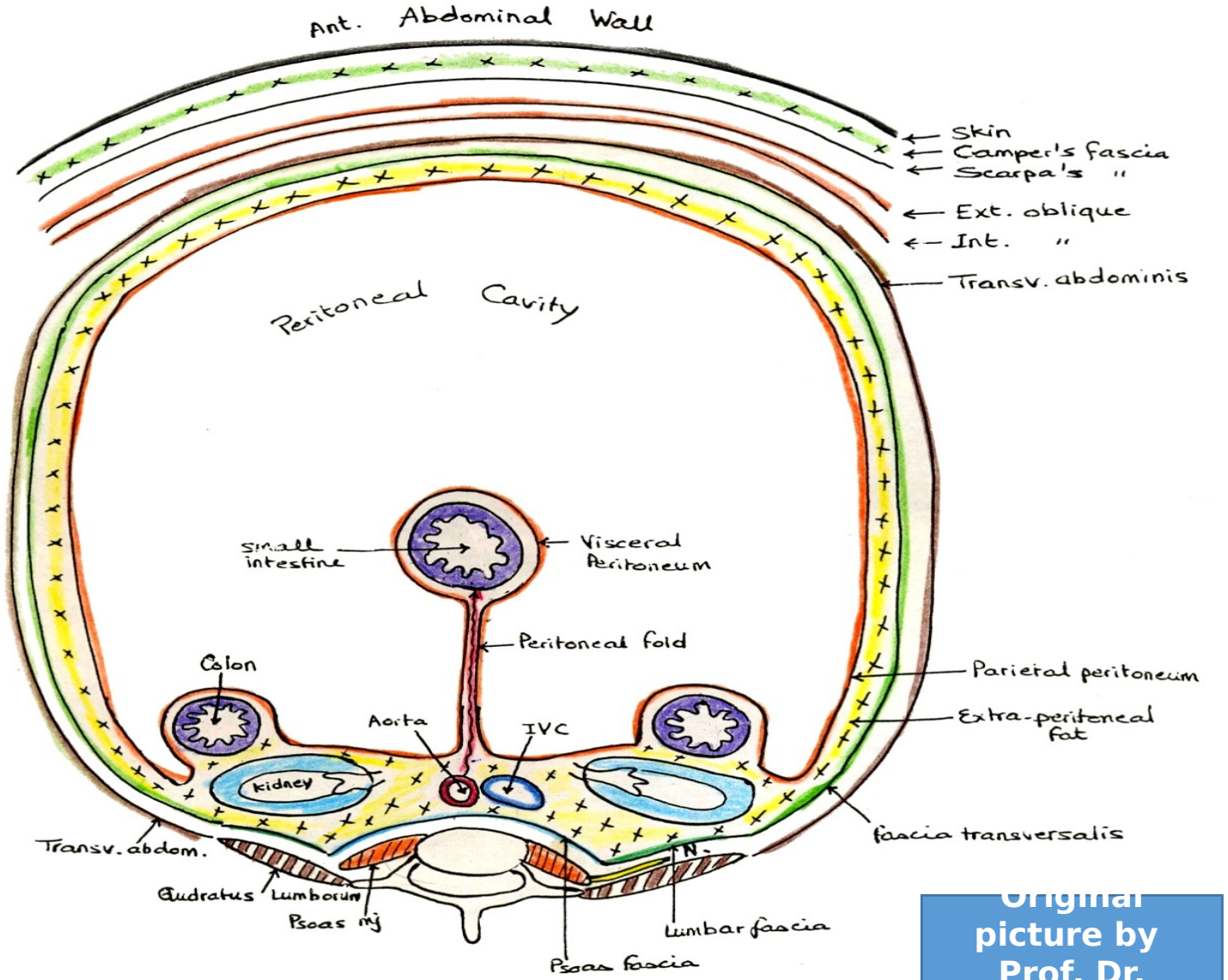
Contents of any peritoneal fold

- The **organ** & its **A. supply.**
- **3 Fixed contents:**

  1- **S**ymp. plexus around the A.

  2- **L**Ns.

  3- Extraperitoneal **F**at.



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Lecture Quiz

An omentum is a double layered peritoneal fold that connects:

A. Stomach with another organ.
B. Stomach with diaphragm.
C. Stomach with anterior abdominal wall.
D. Small intestine with posterior abdominal wall.
E. Large intestine with posterior abdominal wall.

Lecture Quiz Answer

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ANY
QUESTIONS
?

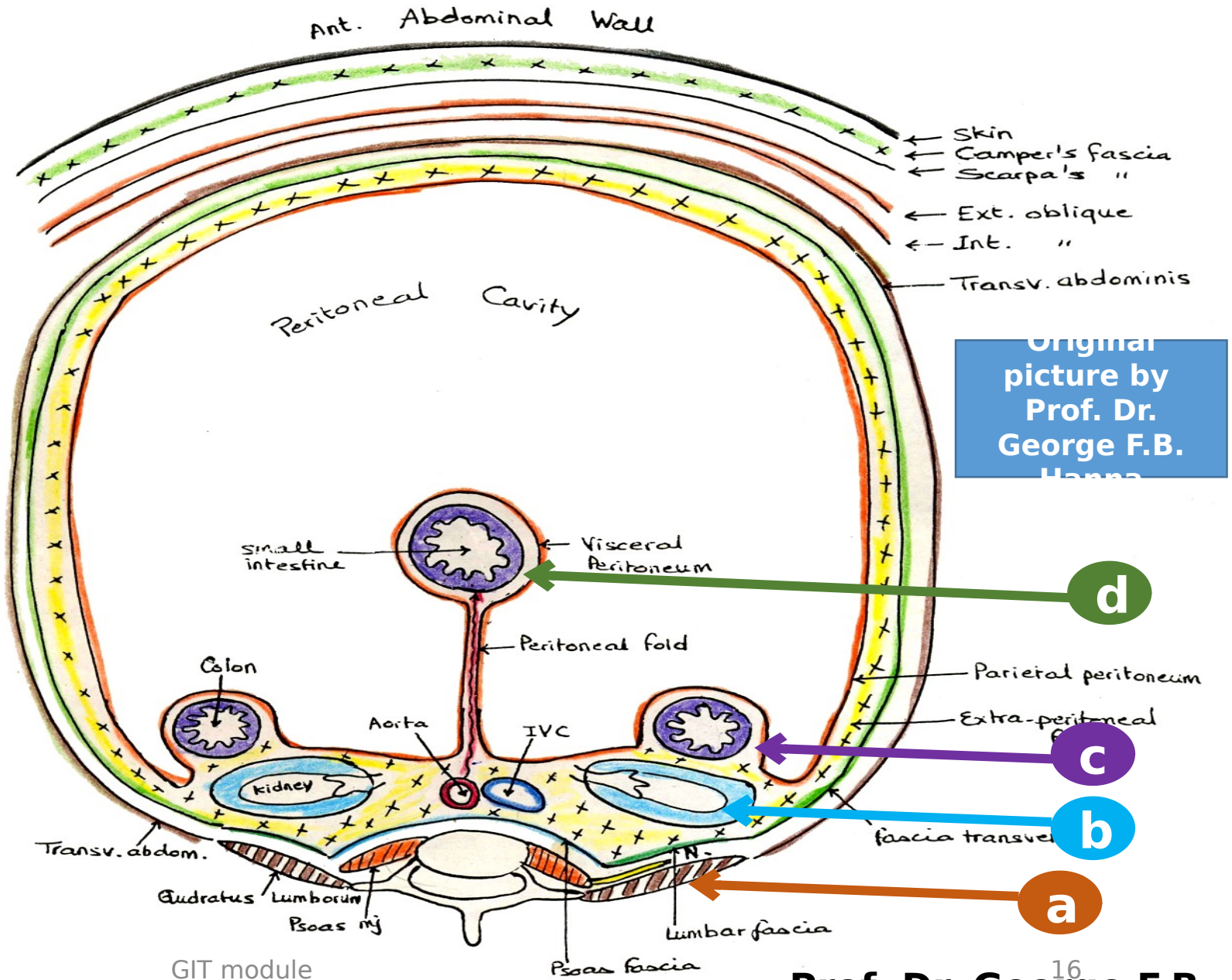
8- It seems that the abdomen is arranged into 4 layers (P - A):

a. **Ms.** & **Ns.** of PAW.

b. **Urogenital organs** & big vessels (**aorta** & **IVC**).

c. **Organs that are covered by peritoneum ant. & lat.**

d. **Organs suspended by peritoneal folds from PAW (more ant. placed organs) : See**



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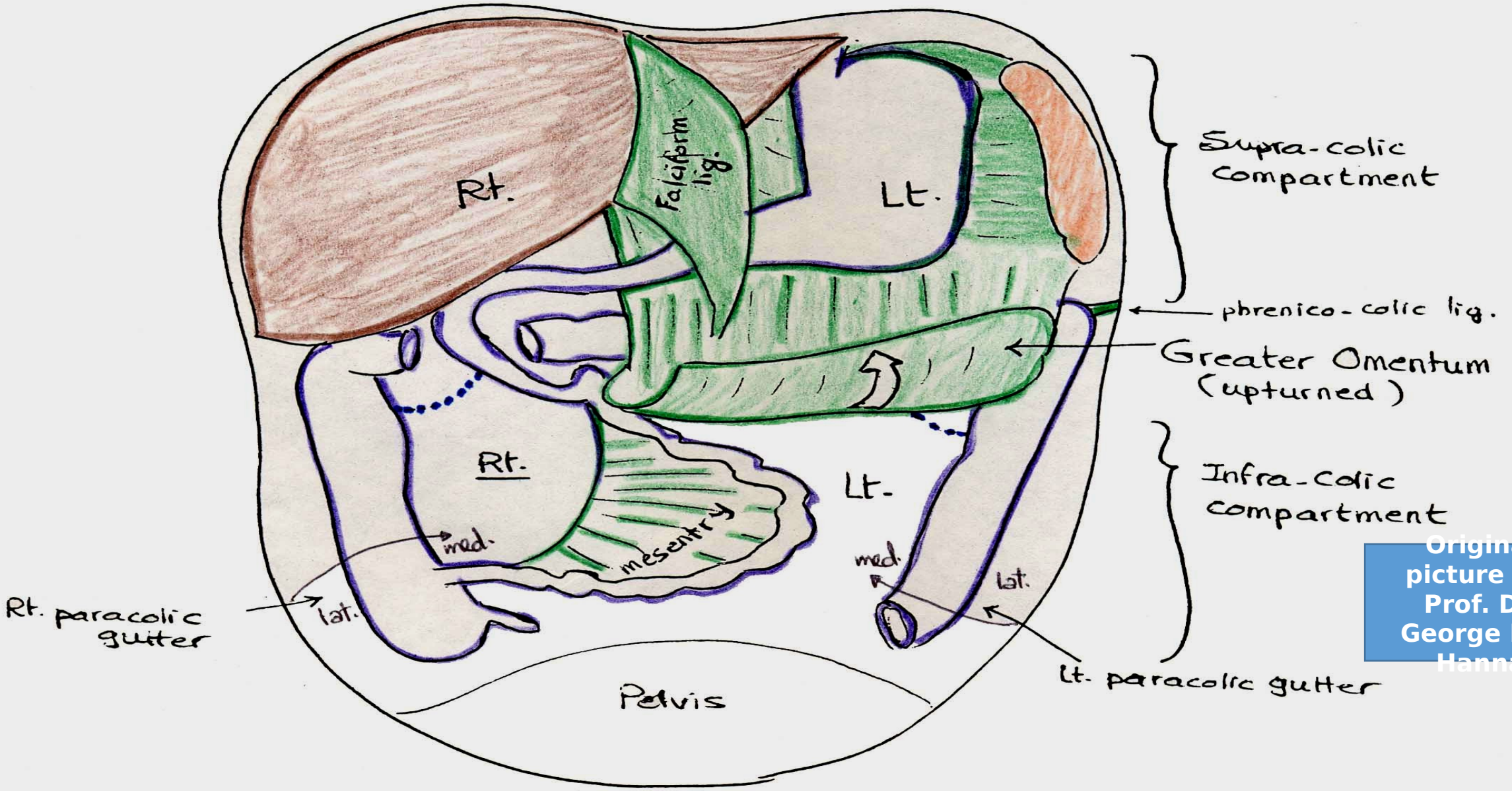
Organs suspended by peritoneal folds from PAW (Ant. View)



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Organs suspended by periton. folds from PAW (Sagittal sec.)

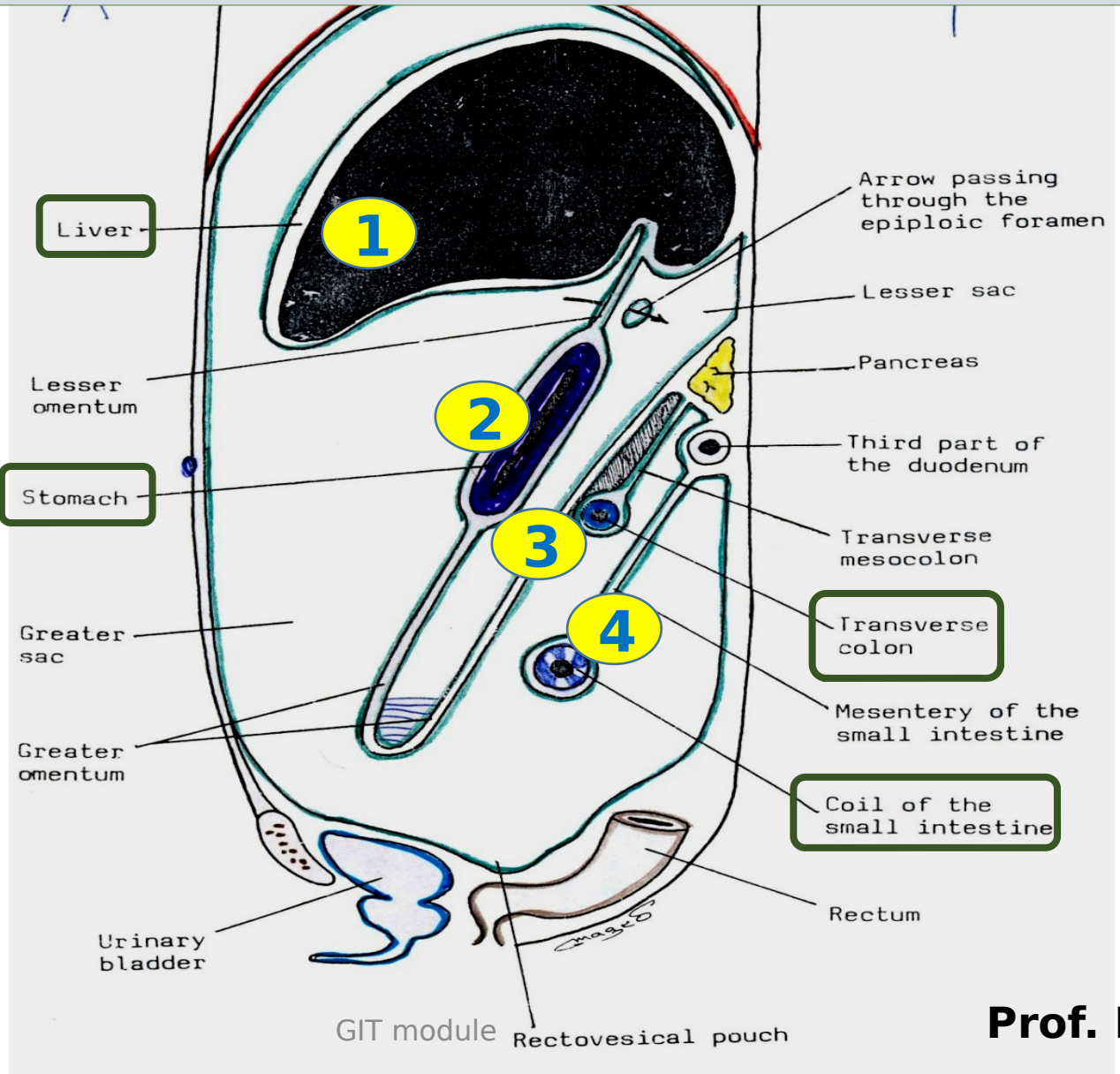
They are arranged into 4 layers (A - P):

1- Liver

2- Stomach

3- Transverse colon

4- Small intestine



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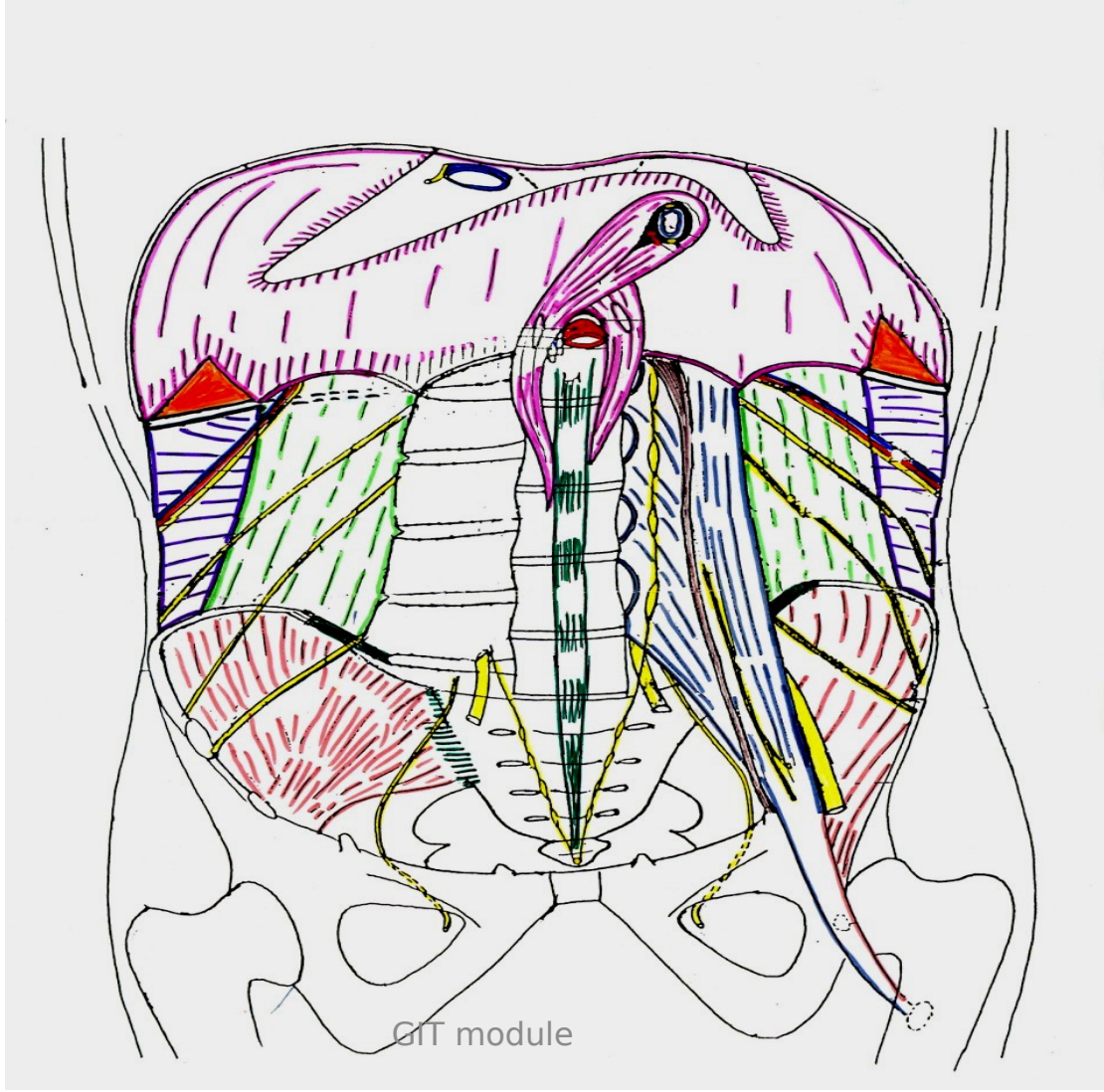
Layer No. 4 = Ms. & Ns.



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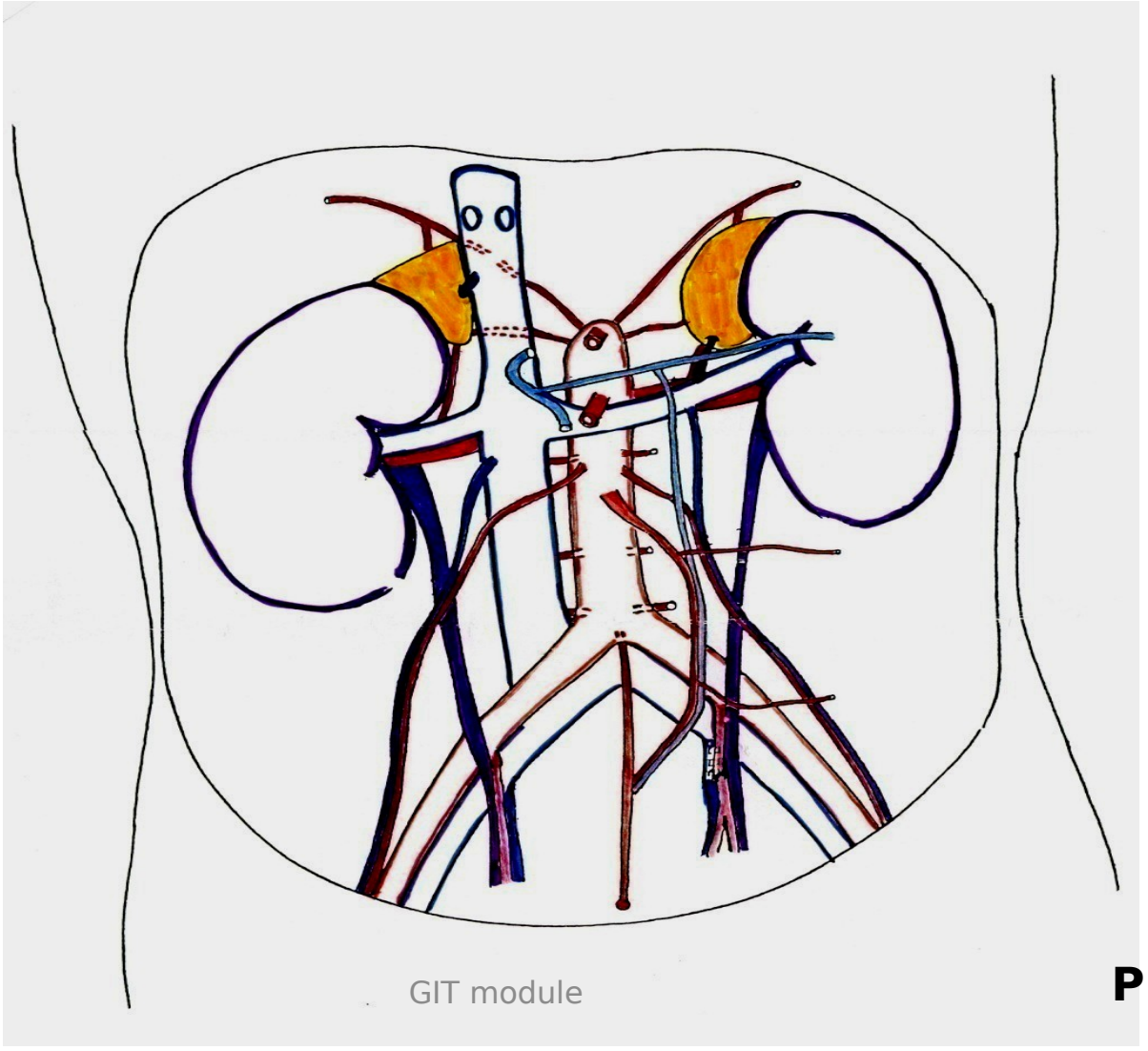
Layer No. 3 = Urogenital system & big vessels



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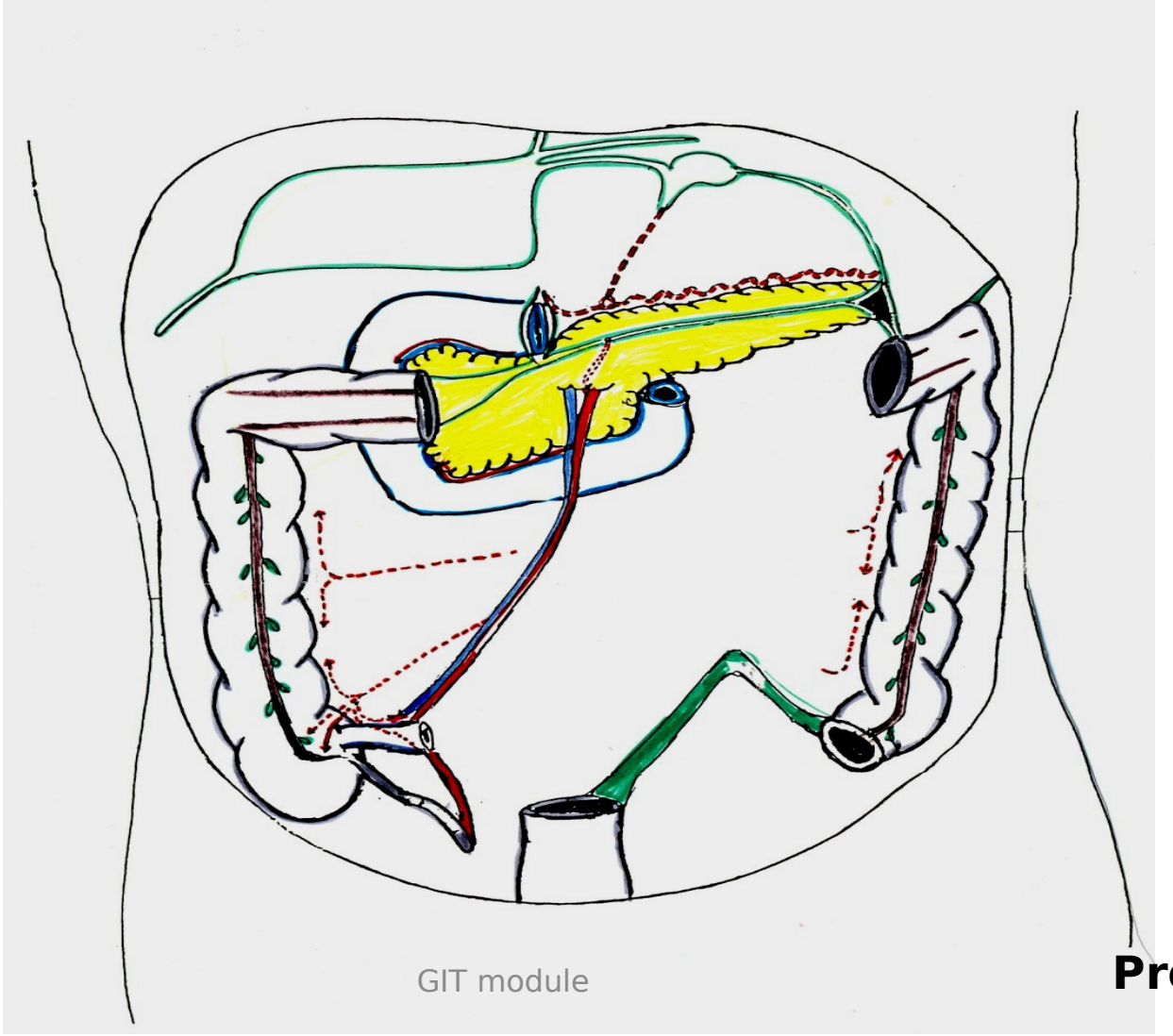
Layer No. 2 = Organs covered by peritoneum ant. & sides

@ 2 Inside each other = pancreas inside duodenum

@ 2 // each other = ascending & descending colons



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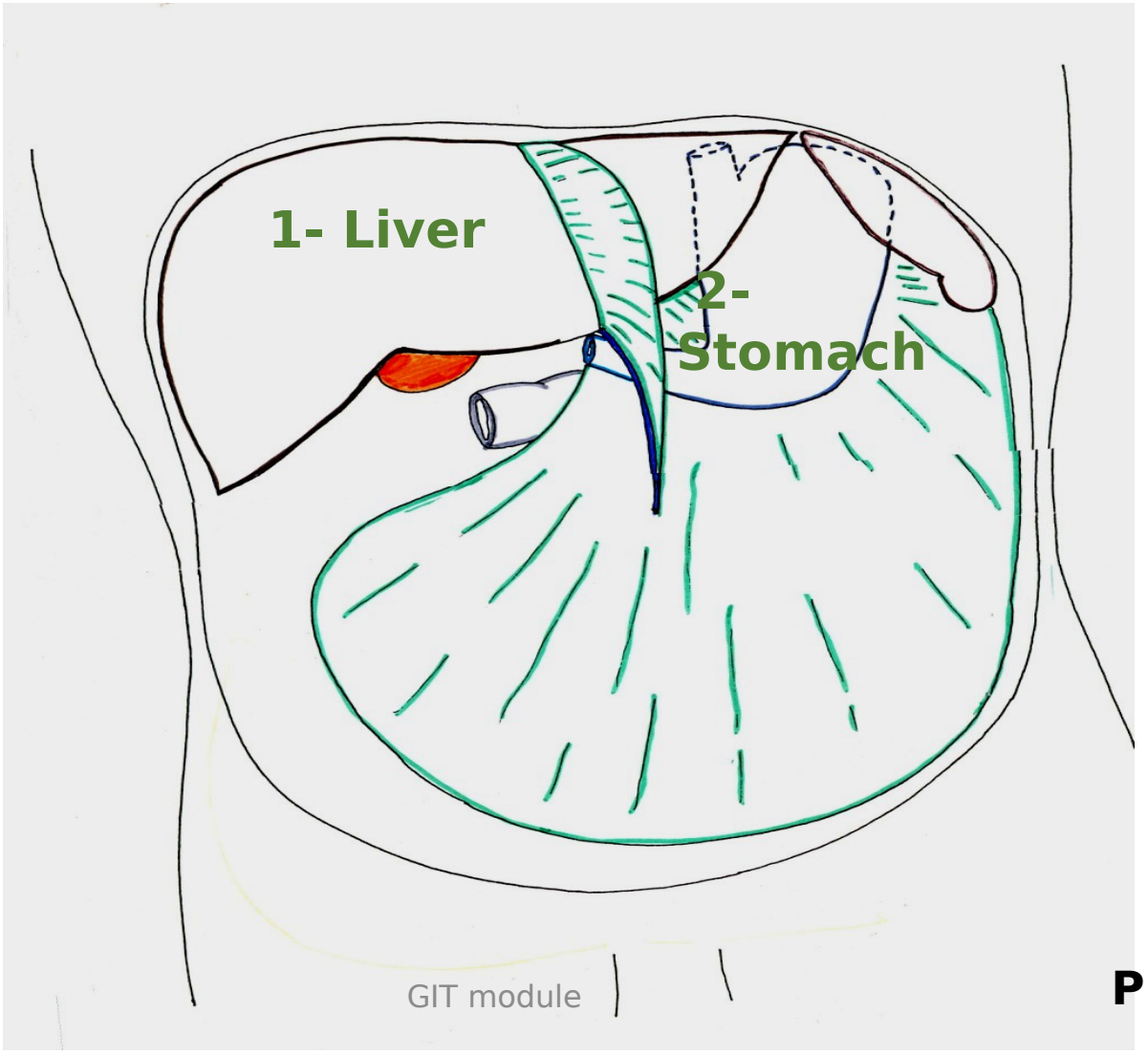
Layer No. 1 = Organs with peritoneal folds



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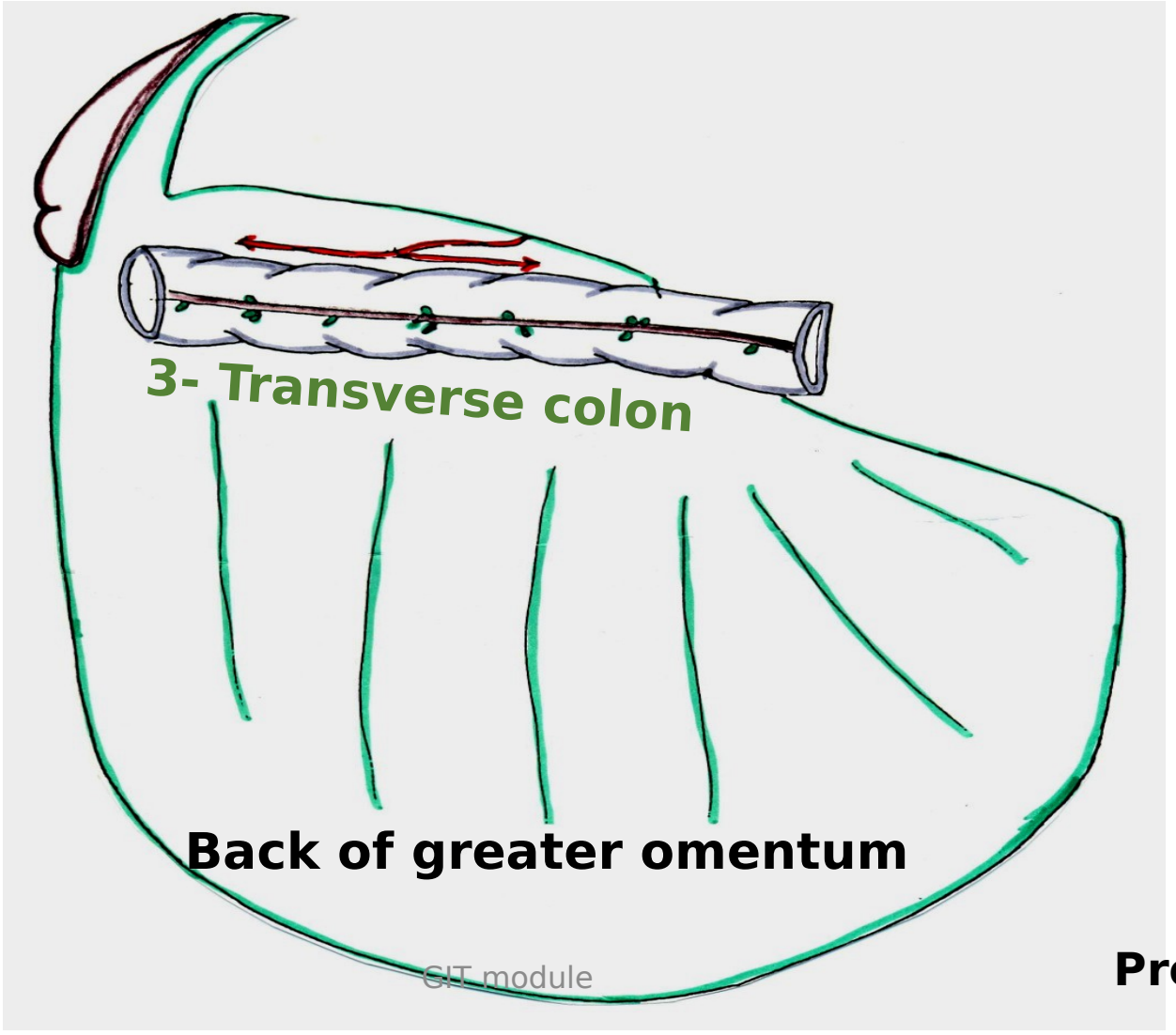

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Lecture Quiz

A 39-year-old female is brought to the emergency room after a motor vehicle collision. CT of abdomen reveals a hematoma of a retroperitoneal origin. Injury of which of the following organs is responsible for such a condition?

A.Liver.

B.Stomach.

C.Spleen.

D.Transverse colon.

E.Pancreas.

Lecture Quiz Answer

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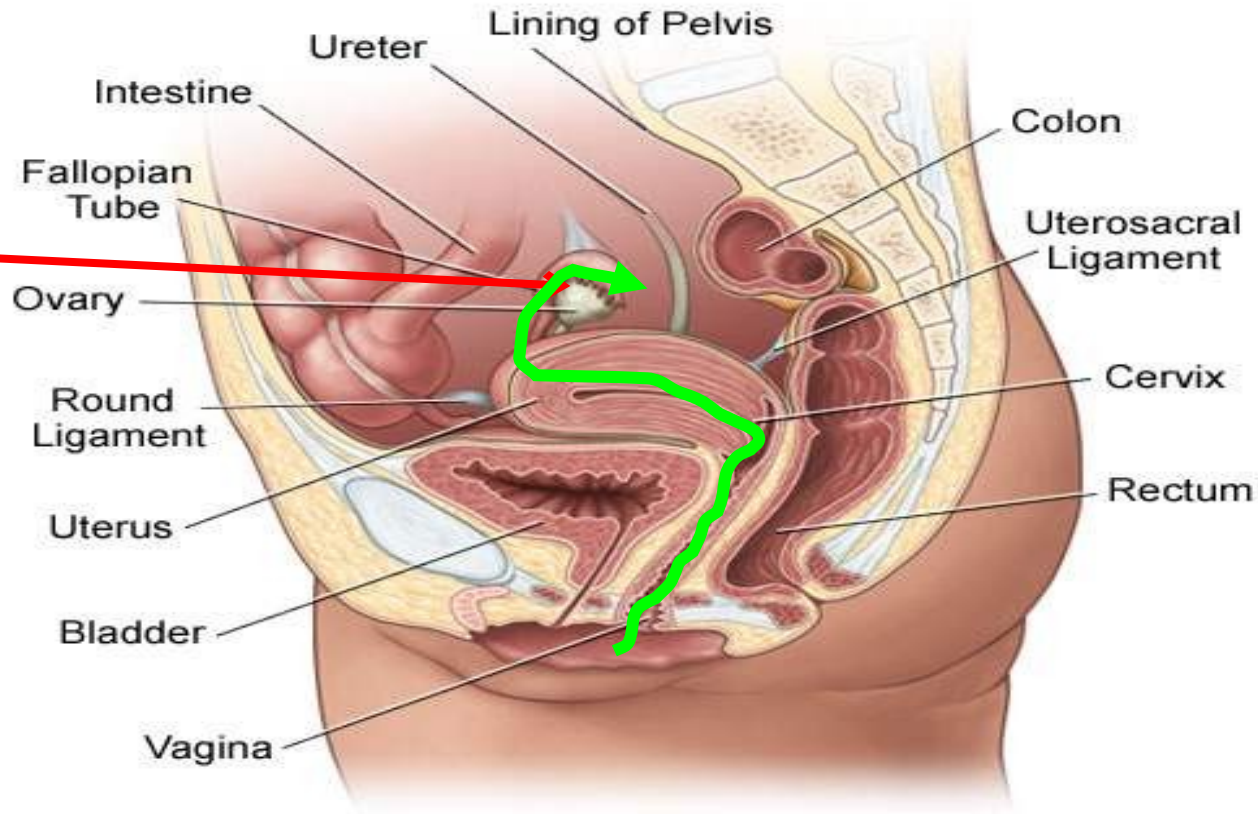
E.Pancreas.


ANY
QUESTIONS
?

Applied Anatomy

Difference between male & female peritoneum

- **Male peritoneum is a closed sac.**
- **Female peritoneum is an opened sac: being pierced by the uterine tube opposite the ovary.**
- **Clinical Note: ascending infection can take place in females from vagina upwards to the peritoneum peritonitis**



Ascites

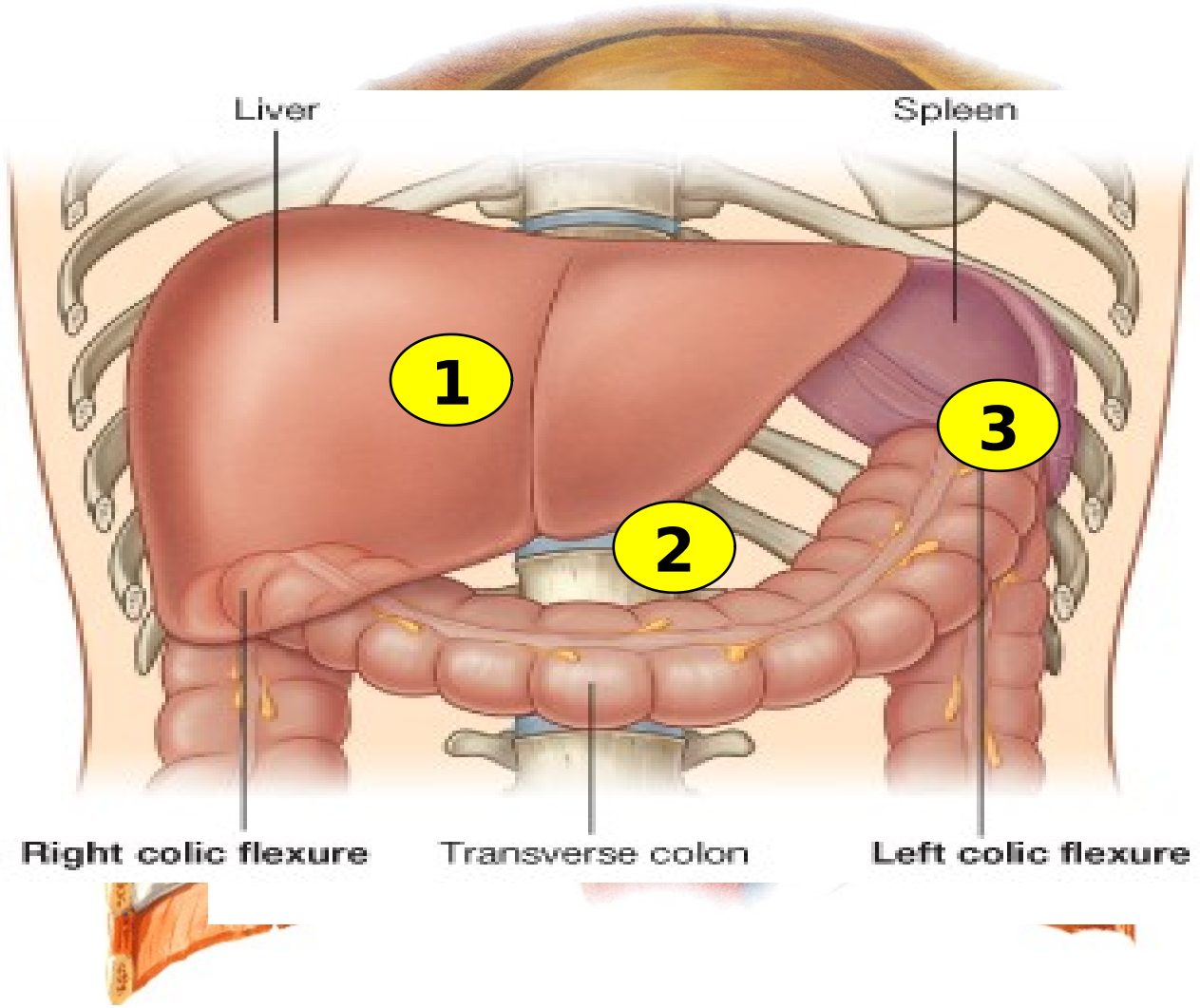
- Ascites is an excessive accumulation of peritoneal fluid within the peritoneal cavity:

1) In a **thin patient**: as much as **1500 mL** has to accumulate before ascites can be recognized clinically.
2) In **obese individuals**: **a far greater amount** has to collec before it can be detected.

Ascites

- Ascites can occur secondary to:

1) Liver cirrhosis (***portal*** venous congestion).
2) Congestive heart failure (***systemic*** venous congestion).
3) Malignant disease (e.g., cancer of the ovary).



Subdivision of Peritoneal Cavity

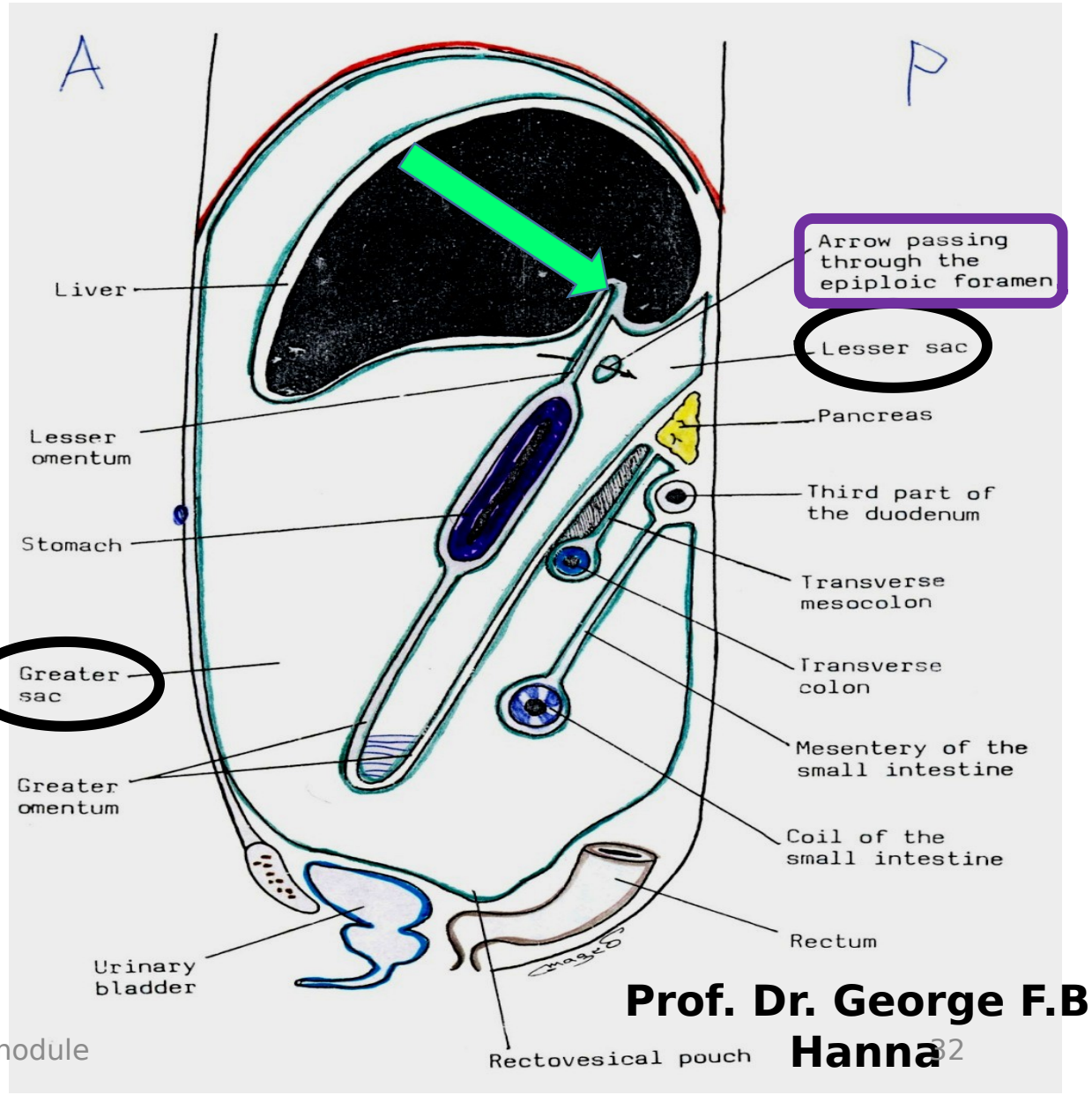
Subdivision of peritoneal cavity

- **Divided by stomach & its 2 omenta into:**

1- Larger ant. part = Greater sac

2- Smaller post. part = Lesser sac

@ Both sacs communicate behind lesser omentum via **"Opening into lesser sac" = Epiploic foramen = Omental foramen = Foramen of Winslo**



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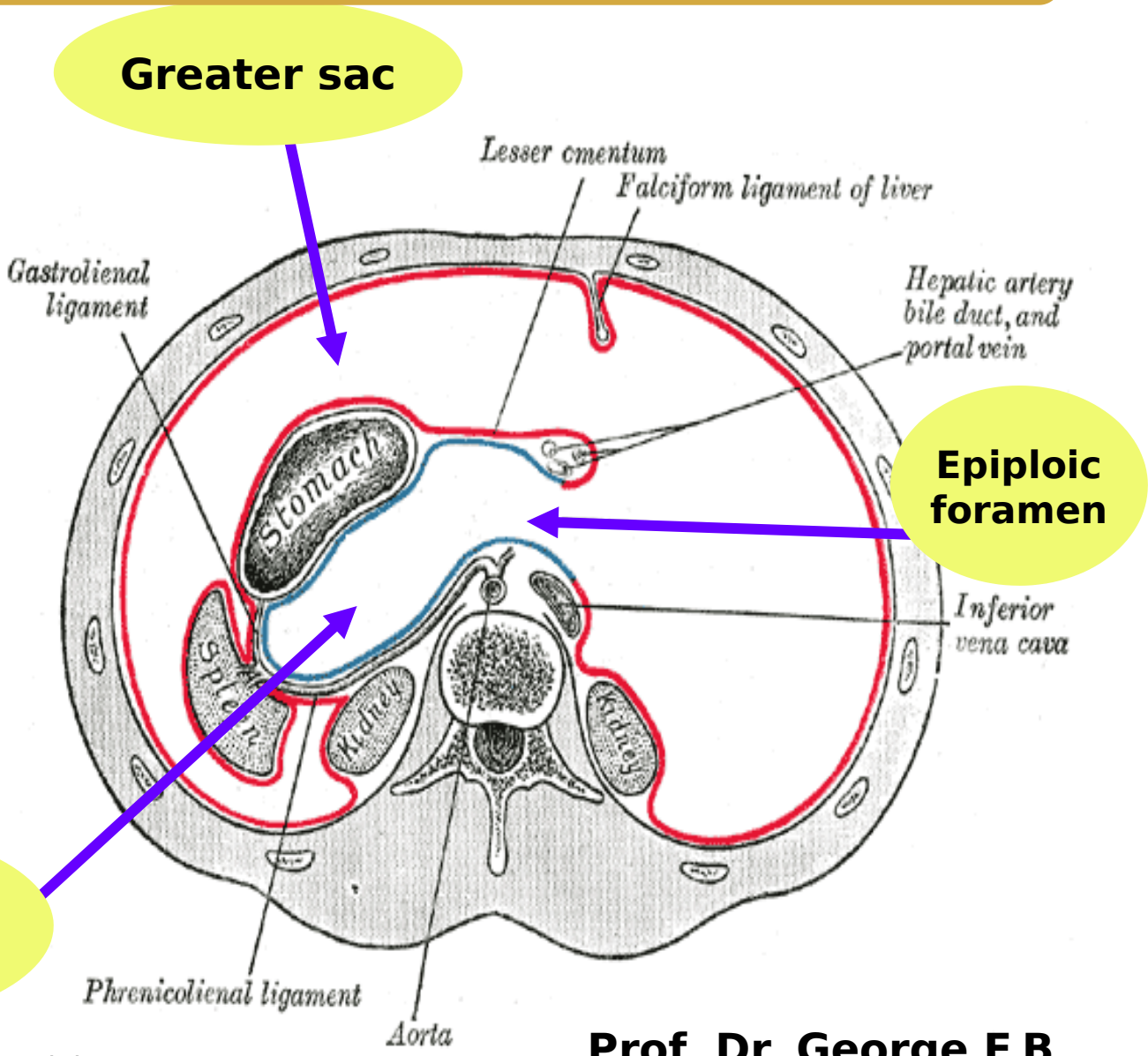
Subdivision of peritoneal cavity

The peritoneal cavity is divided into 2 sacs:

1. **The greater sac.**
2. **The lesser sac.**

The 2 sacs communicate at the omental foramen = epiploic foramen (opening into lesser sac) or foramen of Winslow



Greater Sac

Greater Sac

Divided by the transverse colon into:

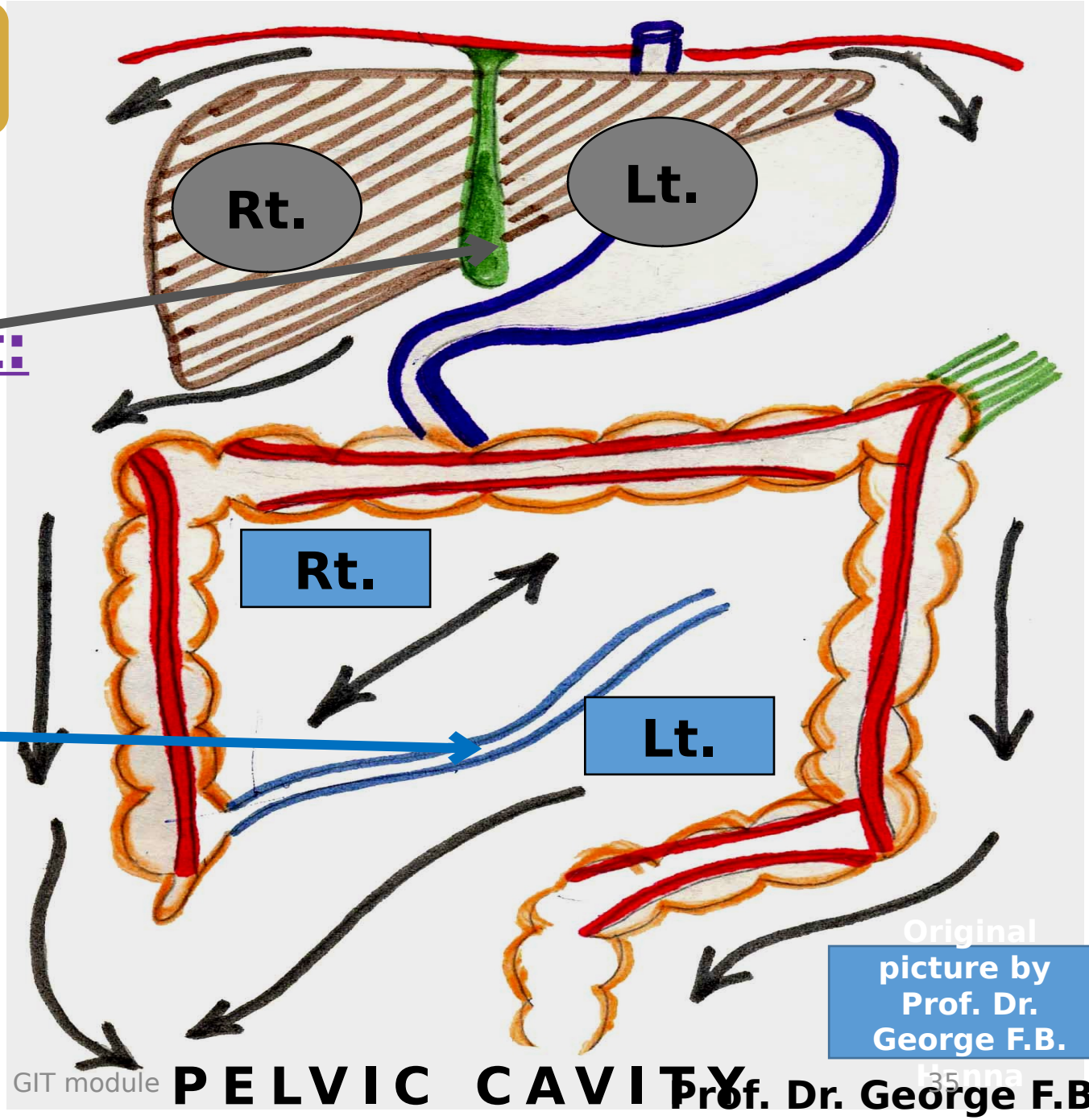
1- Supracolic compartment:

Incompletely divided by the *falciform ligament* into Rt. & Lt. parts.

2- Infracolic compartment:

Incompletely divided by the *root of mesentry* into:

a. Rt. part: completely closed sup. & inf.



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Lecture Quiz

Which of the following peritoneal compartments is closed superiorly & inferiorly?

A. Rt supracolic.

B. Lt. supracolic.

C. Rt. infracolic.

D. Lt. infracolic.

Lecture Quiz Answer

Which of the following peritoneal compartments is closed superiorly & inferiorly?

A. Rt supracolic.

B. Lt. supracolic.

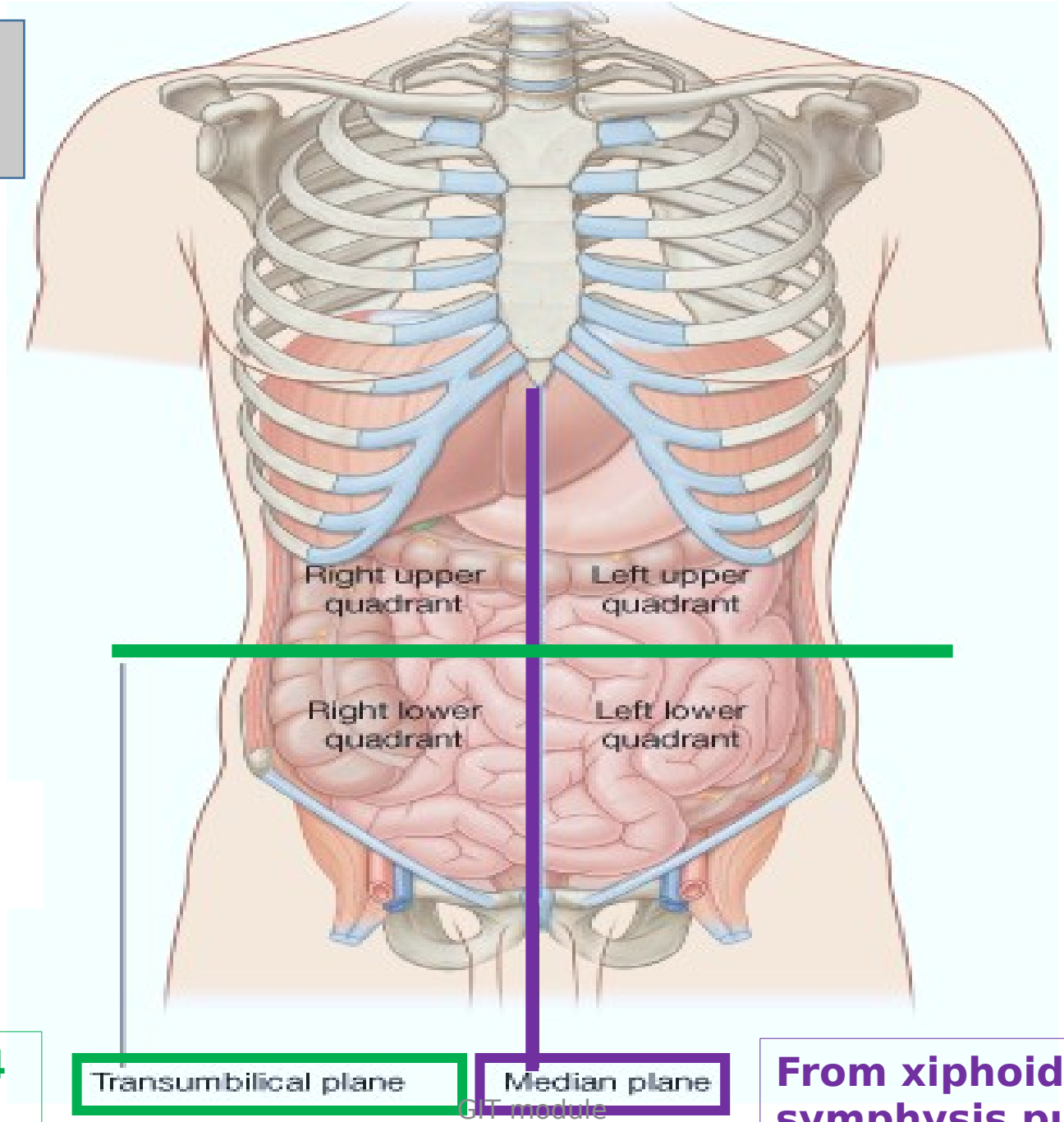
C. Rt. infracolic.

D. Lt. infracolic.


ANY
QUESTIONS
?

Abdominal planes & quadrants

2 planes & 4 quadrants



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At the level of L3 / L4 disc

From xiphoid process till symphysis pubis

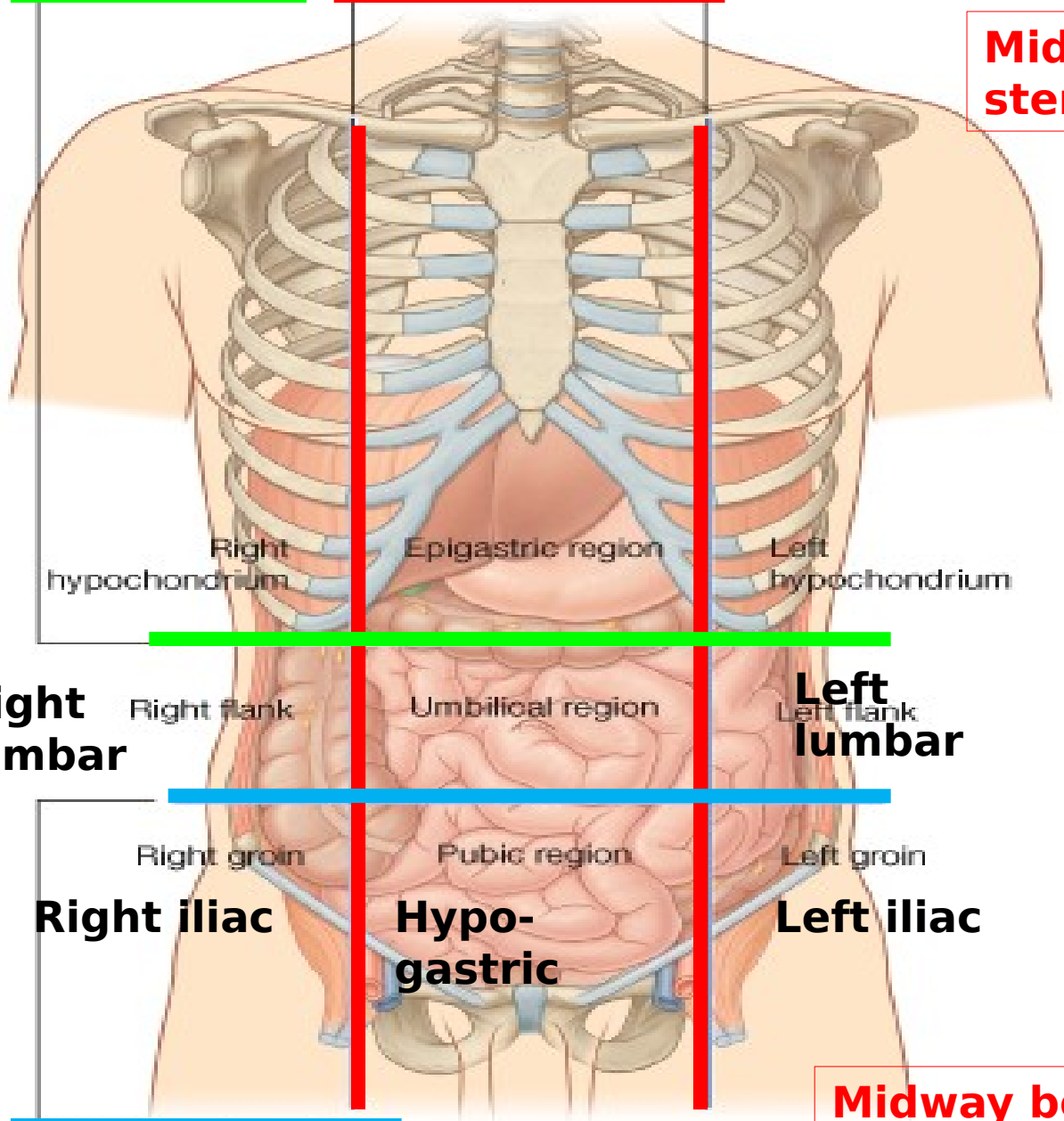
- **Just inf. to the costal margin.**
- **At the lower border of cc 10 = L3**

Subcostal plane

Midclavicular planes

Midway bet. med sternum & acromion

4 planes & 9 quadrants



Right lumbar

Left lumbar

Right iliac

Hypo-gastric

Left iliac

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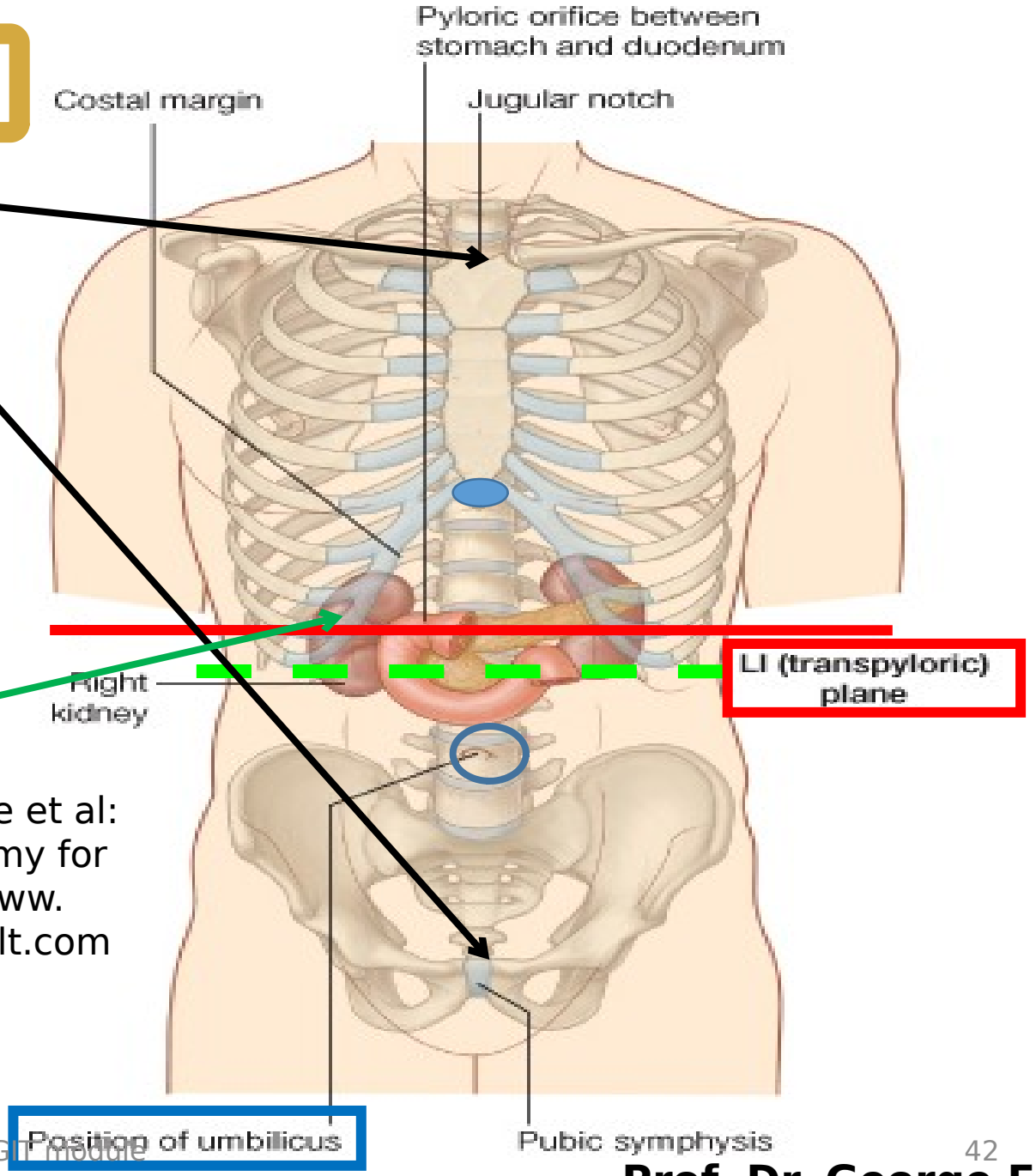
- **Bet. tubercles of iliac crests.**
- **At the level of L5**

Intertubercular plane

Midway bet. Symphysis pubis & ASIS)

Transpyloric plane

- **Midway bet. suprasternal notch & sup. border of symphysis pubis**
- **Midway also bet. xiphoid process & umbilicus.**
- **At the level of L1.**
- **Cuts costal margin at tip of cc 9**



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- **Subcostal plane is at the lower border of cc 10 = L3**

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Lecture Quiz

The abdominal plane that is located at the level of the 3rd lumbar vertebra is the:

A. Midclavicular.

B. Intertubercular.

C. Transumbilical.

D. Transpyloric.

E. Subcostal.

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SUGGESTED TEXTBOOKS

Snell, Clinical Anatomy, 7th edition, p. 152; 157-168.

THANK Y U